GEOGRAPHIC SCHOOL BULLETINS

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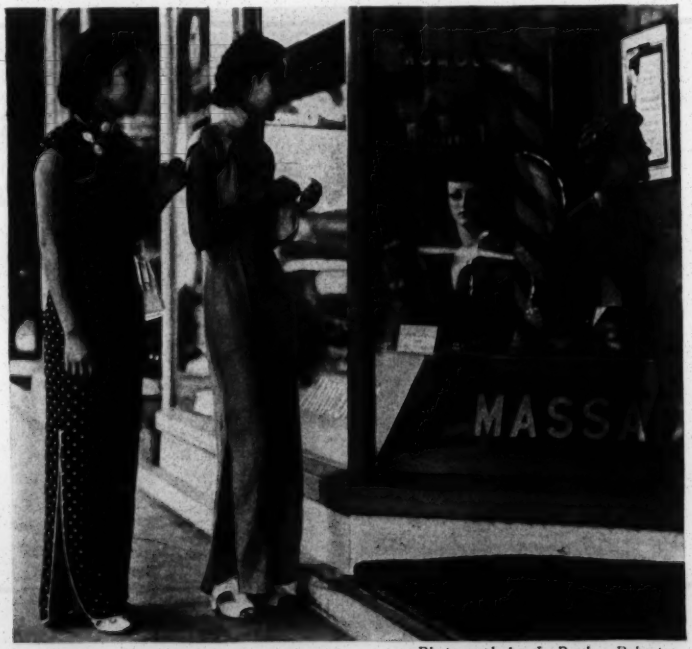

Photograph by J. Baylor Roberts

FRENCH COIFFURES TURN SINGAPORE'S CHINESE HEADS

In international Singapore a French coiffeur, advertising Manicure and Massage in English lettering, catches Chinese eyes also with the hair styles which are displayed in blonde curls clustered around white faces. While keeping their slit-side, high-collar Shanghai dresses, the Chinese belles have adopted bobbed hair, pocketbooks, wrist watches, and toeless slippers. Eighty per cent of British-governed Singapore's people are Chinese (Bulletin No. 5).

HOW TEACHERS MAY OBTAIN THE BULLETINS

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Russia's Invaders Always Aim at Moscow

ALTHOUGH it was not the capital of Russia, Napoleon led his invasion of the Tsar's vast nation against Moscow. In 1812 the capital was the rival newer city of St. Petersburg, built about a century before. But for thirteen weeks the French forces fought their way eastward, and in mid-September marched into Moscow for a hollow victory; the Russians had abandoned the city and set it afire. Six weeks later, with no prospects of peace or provisions, Napoleon gave the command to about-face and start the retreat from Moscow that destroyed his army.

The German invasion also aimed at Moscow, and for the same reason—that the old city around the Kremlin has been for centuries the core of Russian culture.

City Has Grown 1100 Per Cent

For modern Moscow the dangers were multiplied over those of Napoleon's time by the city's congested population and also by the ground plan, which made it a good target for air attack. The population increased more than eleven fold in the past 80 years, growing from 380,000 to 4,342,000. In the process of its growth the city took on the appearance—from the air—of an actual bull's-eye. Its five circular boulevards, marking sites of former fortress walls, lie one within the other, like the dark lines on a target face.

Moreover, like battered London on the Thames, Moscow has a river-arrow pointing to the bull's-eye (illustration, next page).

The Soviet capital lies on both sides of a winding river (the Moskva or Moscow), whose course presents an accurate guide to important sites. The Kremlin, seat of government since the 1917 Revolution, stands beside a deep loop of the stream that extends into the heart of the city, like London's bombed Thames-side Houses of Parliament.

Kremlin Covers 63 Acres

The Kremlin itself is a big target, covering a roughly triangular area of some 63 acres. It is enclosed within a high, battlemented wall, behind which the domes, spires, and towers of its old palaces, churches and government buildings rise in the picturesque skyline of a medieval town. On its hill overlooking the river and the expanding sections of the city that grew beyond it, the Kremlin, or fortress, was long the center of Russia's political and religious life.

Outside the walls of the Kremlin, in accordance with a decade-long building program, streets and squares were widened, old buildings torn down, and new structures of modern design put in their places. The most ambitious project started in the past few years is the skyscraper Palace of the Soviets, west of the Kremlin along the river front. The plans called for the world's tallest building, to reach a height of more than 1,350 feet, and to be topped by a 260-foot statue of Lenin.

Among Moscow's landmarks for enemy fliers are its many squares and public parks. Most famous is the Red Square, an oblong just east of the Kremlin.

In this area Russians of different eras placed two opposite extremes of Moscow architecture. One is the fantastic church-museum of Basil the Blessed, comprising an extraordinary mixture of varicolored spires, cupolas, and onion-shaped domes. The other is the Lenin Mausoleum, burial place of the foremost hero of the Soviets, rising in severe, simple rightangles of red granite.

The business, administrative, and amusement sections of "downtown" Moscow

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Photograph by J. Baylor Roberts

INDIA'S BUDDHA ADMONISHES SINGAPORE TO BE EIGHT-WAYS RIGHTEOUS

In India some 2300 years before Singapore was founded, Gautama Buddha began to preach the "Eightfold Path" to attainment of righteousness, by right beliefs, resolves, words, acts, efforts, thinking, meditations, and life. Now the Siamese Tiger Temple in Singapore enshrines a 40-foot concrete figure of the Indian philosopher, colored in tawny flesh tones, with carmine lips and black eyebrows. Gold leaf makes bright highlights on folds of his robe modeled in concrete. Yards of yellow silk have been draped over the giant image's left shoulder by loyal Buddhists among the polyglot 650,000 people in Singapore (Bulletin No. 5).

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Panama a Pivot of the Americas

THREE different presidents within a day—that is what the recent *coup d'état* conferred on the Republic of Panama. The newest president has announced his willingness to cooperate with the United States.

The international importance of Panama's political friendship is far older than the Republic itself. As soon as explorers learned that the new region Columbus discovered was not the fabulously rich East Indies, but in fact a continent-wide barrier blocking their hopes of westward travel to those Indies, they began grimly to search for a short cut across the Americas. Balboa found it in 1513—in what is now Panama. There the Isthmus narrows to less than 40 miles.

Discoverer of Trade Route Beheaded

After a 25-day journey over the mountainous backbone of the Isthmus, Vasco Nuñez de Balboa stood "on a peak in Darien" and looked down at the Pacific, the first white man to reach the Peaceful Ocean by traveling westward. He claimed the ocean and its shores for the King of Spain. But, having earlier incurred the King's wrath, he was tried, condemned, and beheaded before he could profit by his discovery. The backer of Columbus, King Ferdinand, had a trans-Isthmian road constructed and in use by 1519. Since then, Panama has been the gateway between Atlantic and Pacific, and two hemispheres are affected by whoever holds the key.

Spain was guardian of the gateway until her colonies declared their independence in 1824; Panama was then the northwestern section of Colombia. France sent De Lesseps, builder of the Suez Canal, to cut a waterway through the Isthmus; his failure eliminated French influence from that crossroads of the hemisphere.

After Panama's declaration of independence from Colombia in November, 1903, the new nation was promptly recognized by the United States, and the two concluded a treaty which eventually gave the world its second busiest interocean canal. With Suez traffic menaced by war dangers, the Panama Canal is bidding for first place.

Uncle Sam Rents Shoestring Zone for Canal

Water is the staff of life to the Republic of Panama—water in the Canal. Annual rent paid by Uncle Sam for the Canal Zone through which the Canal runs is one of the biggest sources of Panamanian income. Travelers whose ships are "transiting" the Canal are also a leading cash crop when they pause to shop.

The Canal, in operation since its completion in 1914, affords a short cut between east and west coasts of the Americas, both North and South, as well as a time-saving sea route between Atlantic ports and the Orient. Last year 5,370 vessels made the 8-hour ocean-to-ocean trip through the Canal's locks, carrying a near-record cargo load of 27 million tons. In 1937 the tonnage was about one million higher.

The shoestring-shaped "buffer" between the Canal and the rest of Panama is the Canal Zone, a five-mile strip on each side of the waterway which aggregates some 550 square miles that the United States rents from the Isthmian republic.

Of modest size in spite of its international importance, Uncle Sam's landlord nation is no larger than the State of Maine. The republic's half-million inhabitants include 78,000 whites and 42,000 Indians, whose native phrase for "abundance of fish" gave Panama its name. When Balboa climbed its mountains, it was called

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surround other architectural contrasts, including the old Bolshoi Theater, home of the Russian ballet, and the modern Telegraph and Telephone Building; the 19th century Historical Museum and the All Union Lenin Library, with some ten million volumes. There is the science-promoting Polytechnical museum, covering a city block, and the home of a rich 17th century boyar (noble) made into a museum.

The long-term building program has brought Moscow new housing units, clubhouses, theaters, and hotels, rising between 6 and 14 stories high. Blocks of uniform eight-story structures were built, with shops on the street and apartments above. The new Moscow Hotel, on broad Hunter's Row leading to Red Square, has 1,200 rooms, each equipped with bath and radio.

Note: The National Geographic Society's Map of Europe and the Near East, published in 1940, affords an excellent picture of Moscow in its relation to other Russian cities and the railways. The Map may be obtained at the Society's headquarters in Washington, D. C.

See also: "Russia of the Hour," in the *National Geographic Magazine*, November, 1926, and the following GEOGRAPHIC SCHOOL BULLETINS: "Soviet Union, Giant Among Nations," October 6, 1941; "The Big Four of Russia's Beleaguered Cities," October 20, 1941.

Bulletin No. 1, November 3, 1941.

© *Dr. Orrin S. Wightman*

THE WINDING MOSKVA RIVER IS A GUIDE TO THE KREMLIN

As the Thames leads aerial attackers to London, the Moskva or Moscow River shows airplane pilots the way to Moscow and to the Kremlin, on the river's left bank. The Kremlin (meaning fortress) is fortified by a wall 65 feet high and 500 years old. Within the walls, besides the palace of the Tsars, stand four cathedrals and a convent, as well as several clusters of government buildings. The photograph was taken from the lofty tower of a carillon built by Boris Godunov, Tsar at the 16th century's close; the largest bell in the world was cast for this belfry, but, damaged in one of Moscow's frequent fires, it was never installed.

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Tung Oil No Longer Flows from China's East Coast

ALL United States imports of tung oil have come from China, principally from the southern part of the country. Since Japanese occupation checked the flow of commerce from China's vital east coast tea-and-silk ports, from Shanghai south to Pakhoi, the supply of China's tung oil to the outside world has also dwindled.

Efforts to expand Western Hemisphere sources of the oil, for which no completely satisfactory substitute has yet been found, have brought about the planting of tung trees in Brazil, and a steady development of new plantations in the United States as well (illustration, next page).

Oil From Fruit Seeds of Robin's-Egg Size

Tung oil is extracted from the seeds of several varieties of tung tree, native to the Orient. The trees grow to about 25 feet in height. With their white to pinkish blossoms, in the spring they resemble apple trees. The tung fruit is no larger than a small apple. Its five seeds are about the size of robins' eggs.

In China the trees grow wild. The tung fruit is allowed to fall to the ground and dry for a month to six weeks before gathering. The husks are removed by parching or fermenting, and the seeds are ground to meal from which the oil is expressed in primitive wooden presses. In the United States the trees are planted in orchards, or in small groves, and the processes of husking, cutting, cleaning, and pressing are largely performed by machinery.

For ages the Chinese have waterproofed the timbers of their junks with tung oil, which also has the property of resisting the corrosive action of salt water on wood. The oil's principal modern use is in paints and varnishes. Because it readily stiffens into an inert, jellylike film, it is used as a drier and for waterproofing and weatherproofing. Varnish prepared with the oil sheds water better than a duck's back.

Another Lesson from the Chinese for the Navy

The U. S. Navy, as well as other nations' fleets, depends on tung oil as an ingredient in varnish for spars (hence "spar varnish") and other woodwork, especially that exposed to weather and salt spray.

From Chinese success in waterproofing silk and paper with tung oil, Western nations learned that other fabrics could be made waterproof by the same means. Tung oil is used in some linoleum compounds and in table oilcloth. It goes into waterproofing of raincoats, shower bath curtains, balloon outer covers, and even cartridge shells. It has a place in the insulating compounds for dynamos, cables, and wire coatings. Also among purchasers of tung oil are manufacturers of building board; pump, steam pipe, and engine gaskets; and brake linings and enamels for automobiles.

Though Dr. David Fairchild of the U. S. Department of Agriculture first introduced the tung tree to California in 1905, tung culture remained at a small-scale, experimental level for 25 years. Manufacturers could then obtain all they needed from China. But the acreage of tung plantations in the United States now has been greatly extended. Today, about 175,000 acres in the southeastern United States have been planted in tung trees. Of this area, only about fifty or sixty thousand acres are yet in full production of the oil-bearing fruit.

In 1940, the United States produced 5,000,000 pounds of tung oil, but imported

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Darien, a title still applied to the rugged, roadless province between the Canal and Colombia. Possibly the most colorful of all Panama's Indians are those of the San Blas Islands, whose womenfolk wear gold rings in their noses from babyhood and claim ownership of all the family property.

Panama City, which has watched traffic figures rise and empires fall since 1519, is the capital and largest city; Colón on the Atlantic is only half as big.

Outside its Canal business, the chief concern of Panama is with exports of bananas, cacao, and coconuts.

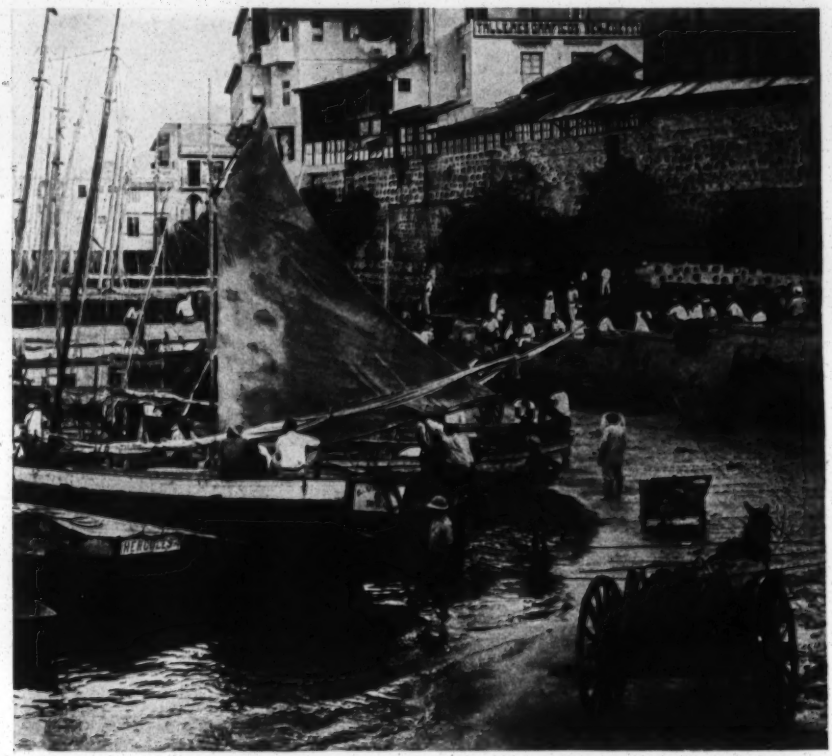
Note: The Panama of today is described in the article, "Panama, Bridge of the World," in the November, 1941, issue of the *National Geographic Magazine*. See also: "Who Treads Our Trails?" September, 1927, and "Jungles of Panama," February, 1922.

The following articles on Panama are contained in the GEOGRAPHIC SCHOOL BULLETINS: "Transferred Ships Under Hemisphere's Youngest Flag," December 4, 1939; "Bushmaster Bagged by Young Snake-Snarers in Panama," October 19, 1936; and "Uncle Sam Signs New Lease with Landlord Panama," March 23, 1936.

The National Geographic Society's Map of Mexico, Central America, and the West Indies (1939) is useful in studying Panama. The Map, which may be obtained from the Society's headquarters in Washington, D. C., has an inset showing the Panama Canal.

Special prints for wall display of N. C. Wyeth's painting of Balboa contemplating his goal are available in full color, 30 x 8 inches, from the Society's headquarters. The prints may be purchased framed or unframed.

Bulletin No. 2, November 3, 1941.



Photograph by Alfred T. Palmer

FISHERMEN MAKE PANAMA LIVE UP TO ITS NATIVE NAME: "PLENTY OF FISH"

Tied up along the old sea-wall at Panama City lies part of the native fishing fleet. The most spectacular of the many fish abounding in waters off Panama is the sailfish, equipped with rich blue fins and a long sword. Sportsmen angling for Panama sailfish have landed 700-pounders. The waters also reward turtle fishermen, and the Perlas Islands owe their name to their beds of pearl oysters.

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What's in a Ship?

AMERICAN shipyards are bustling with activity as the Government's effort to parallel the rapidly growing Navy with a modern merchant fleet gains momentum. Even before the defense and lease-lend programs brought orders for acceleration, the United States Maritime Commission was engaged with shipyards and steamship lines in plans to build enough cargo vessels to recover the independent position on ocean trade lanes which the nation held in clipper ship days. Already the United States has, after Great Britain, the world's next largest merchant fleet, but many of the old ships are obsolete.

Proudly churning out of harbor on its maiden voyage, its own whistle answered by hoarse and shrill farewells from other craft, each new merchantman represents many months of work by hundreds of men. Sleek and swift in its dressy suit of fresh paint, the new-born vessel embodies a fabulous variety of materials and equipment, hustled together from all parts of the United States and several foreign lands (illustration, next page).

Steel Scales on a Steel Skeleton

What's in a ship?

The list of materials is, of course, topped by the miracle metal, steel. Of the weight of a ship ready for service (except for fuel, water, and some other equipment), about 60 per cent is represented by steel. Most of the steel used in United States vessels is medium steel, which has great strength but is soft enough to be bent.

Heaviest use of steel in a ship is in the plates which form the "scales" of the big man-made "fish." These plates usually are one-fourth inch to one inch thick, 20 to 30 feet long, and 4 to 8 feet wide. They are placed on a skeleton of ribs and girders, and together with the steel decks and bulkheads provide most of the vessel's structural strength. Rivets by the thousand still hold together the steel walls of most sea-going craft, though welding finds more and more uses.

Steel predominates in the engine rooms of a modern merchant ship. Cylinders, turbines, boilers, and shafts are mostly steel—usually alloy steels made hard and tough with small amounts of nickel, manganese, and other durability-giving metals. Propellers are often made of cast steel, though bronze is also used.

Steel also goes into many of the vessel's fittings and instruments, such as anchors, chains, winches, wire cable, pulley blocks, cargo hooks, booms, lifeboats, and davits. Furniture is mostly sheet steel. A special effort is made to avoid inflammable materials. Wood still has essential uses, however, in cargo battens, hatch covers, doors, weather decks, and handrails.

Paint Adds Tons to Weight

Canvas by the acre furnishes covering material for boats, hatches, winches, machinery, and decks. Of the dead weight of a completed ship, paint alone accounts for tons. Plastic materials are gaining wider use in small articles, such as electrical fixtures, particularly on ships with extensive passenger accommodations.

Almost all the strategic materials, which must be obtained in whole or in substantial part outside the continental United States, find their way into ships. Ropes are made of manila fiber from the Philippines. Mica appears in a rubber-shale aggregate used for walking surfaces laid on steel. Manganese, tungsten, and nickel are in high-quality steels used in moving parts. Alloys of tin and antimony

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nearly 100,000,000 pounds. This year, because of other demands on shipping and because of the Sino-Japanese war, imports are likely to be considerably less.

United States agricultural experts are trying to persuade southern farmers to grow tung trees in small groves as a lucrative addition to their usual crops. Tung trees may bear fruit after the third year, but real production comes after five to seven years. A good average yield is a ton of whole air-dried fruit per acre.

Early spring frosts are the special threat to the trees in southeastern United States, where a belt some miles back from the Gulf Coast of Florida, Alabama, Mississippi, and Louisiana seems to offer the best conditions for their growth.

Note: Other commodities ordinarily shipped in China's east coast trade which have been treated in the GEOGRAPHIC SCHOOL BULLETINS include several of the Strategic Materials series: No. 9, "Antimony Is Lead's Partner," October 20, 1941; No. 8, "Silk Now Goes to War," October 6, 1941; and No. 3, "Tungsten 'Can Take It,'" April 21, 1941. See also "How China Conflict Invades American Home," October 4, 1937.

Bulletin No. 3, November 3, 1941.

Photograph from Illinois Central System

SOME MISSISSIPPI MONEY GROWS ON CHINESE TREES

In 1905 the tung tree was introduced into California from China's Yangtze Valley, but a recent survey showed that Mississippi had more than half the tung trees of the U. S., chiefly in Pearl River County. After the ripe and fallen fruit has dried, the seeds are crushed to yield oil for varnishes, linoleum, and waterproofing. The generous profit on tung trees, now that Chinese supplies of tung oil are cut off by war, has inspired a boom in planting, bringing the acreage of tung trees to 175,000 in the southeastern United States alone.

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Geo-Graphic Brevities

BRAZZAVILLE ON THE CONGO, A FREE FRENCH CAPITAL

A FRENCH explorer named De Brazza founded a riverside settlement in the Congo in 1880. It was named Brazzaville in his honor. Using the place as a base, he proclaimed a protectorate for France over much of the vast territory to the northeast which within the past decade has constituted French Equatorial Africa, a jungle and desert colony one-fourth as large as the United States.

Now Brazzaville is the Free French base of operations for all of Africa. Although General De Gaulle in London heads the political organization of Frenchmen who refused to surrender with France, Brazzaville is headquarters for troops, provisions, communications, and commerce of the Free French on the African continent. Its radio station is the most powerful in mid-Africa. Recently a mission arrived there representing the U. S. Army, Navy, and State Department.

Brazzaville has grown to be an important trade center since the completion, in 1934, of the railway linking it with the Atlantic seaport of Pointe Noire. Of the city's present population of 40,000, about 900 are white.

The city's expanding waterfront, about 250 airline miles up the Congo River, hugs the north shore of Stanley Pool, below which falls and rapids make the great river unnavigable. Above the Pool, river steamers can operate unimpeded for more than 1,000 miles. Ivory, coffee, rubber, palm oil, hides, wax, lead ore, and tin are among the products transferred from ship to rails at Brazzaville on their way out of the heart of Africa. Machinery and other manufactures return over the same route to the hinterland.

SARAWAK SEES SUNSET OF WHITE RAJAH REGIME

OVER the forested tropical land of Sarawak, as big as the State of New York, for one hundred years three white men one after the other have held undisputed power. James Brooke, a British soldier of fortune for the British East India Company, for helping the Sultan of Borneo quell a rebellion of Dayak natives was made Rajah of Sarawak in 1841, ruling over seven thousand square miles. This year his great-nephew celebrates a century of White Rajah rule in a realm of 50,000 square miles and a half-million Dayaks intermixed with Malays and Chinese.

But the present Rajah, Sir Charles Brooke, has no son to succeed him. In the hundredth anniversary celebrations, he proclaimed that a constitutional government would be set up for Sarawak, and summoned representatives of Chinese, Malays, and Dayaks to help write the constitution.

The United States in 1850 was the first nation to recognize Sarawak as an independent state. In 1888 it came under the protection of Great Britain, as far as its foreign policy is concerned, but for domestic matters the White Rajahs have been supreme in this land of head-hunting natives.

Because of the peaceful rule of James Brooke, the first white ruler, one tribe after another sought his protection; thus Sarawak reached its present area.

Kuching, capital of Sarawak, is a city of 25,000 on the Sarawak River.

In large villages in the forest natives occupy long communal houses for as many as forty or fifty families. These dwellings are mounted on poles, eight or nine feet from the ground, roofed and walled with palm thatch.

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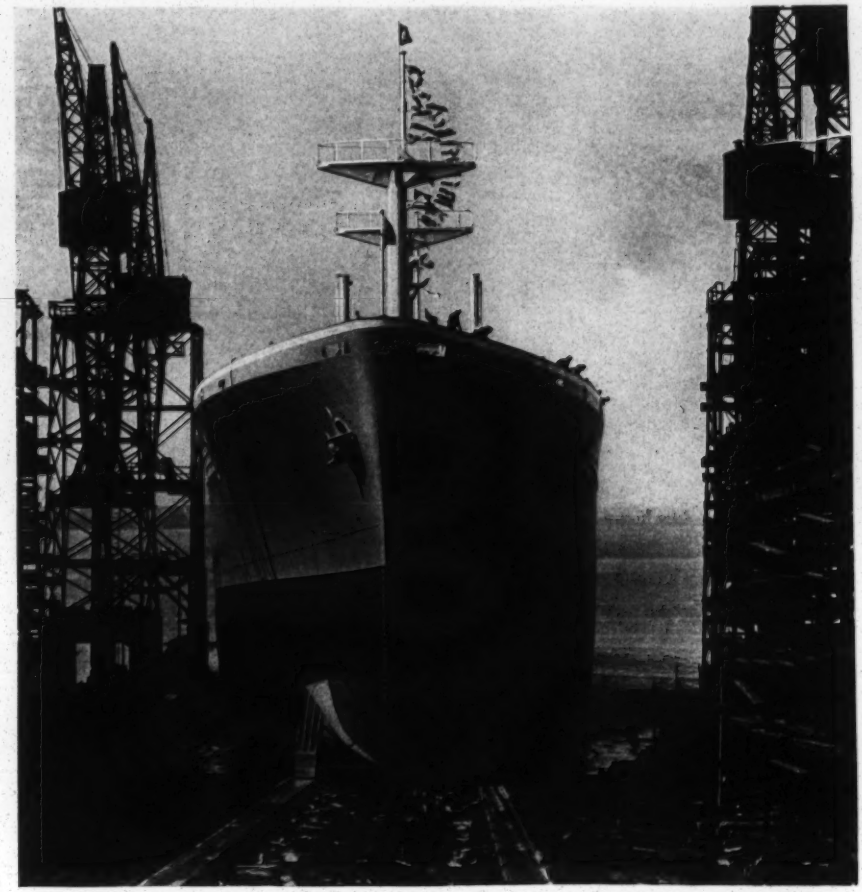
are employed in bearings; thermometers and barometers contain mercury. Chromium is found in decorations; rubber has uses in gaskets and as a cushioner.

Every State in the Union furnishes materials that can be used in building and equipping a ship. A recent survey showed that the timber might come from 26 States, iron from 24, coal from 23, petroleum from 20, leather from 19; cotton for canvas from 17; lead and zinc from 16; machinery from 13; copper and wool from 12.

Note: Pictures of ships and further discussion of shipbuilding appear in these articles in the *National Geographic Magazine:* "Ships from Dugouts to Dreadnoughts," with 16 gravure reproductions of etchings by Norman Wilkinson, January, 1938; and "Ships That Guard Our Ocean Ramparts," with 8 reproductions in color of paintings by Arthur Beaumont, September, 1941.

Bulletin No. 4, November 3, 1941.



Photograph by A. Leigh Sanders

SLIDING OUT OF ITS SCAFFOLDING CRADLE, THE NEW SHIP LEARNS TO SWIM

Held upright during construction by timbers propped against the scaffolding, the ship stands alone for the first time for its christening, as the last prop is knocked away. Gravity pulls the new vessel down the ways to the water. The "Robin Locksley" was photographed at the breathless moment when a ship shows whether it can balance itself on water. This is a member of the fleet of merchant ships being launched at the rate of one a week in the Bethlehem Steel shipbuilding plant at Sparrows Point, near Baltimore, Md. The "Robin Locksley" has a capacity of 9,700 tons and a speed of 15½ knots (in land terms, nearly 18 miles an hour).

Sarawak's varied mineral deposits include coal, nickel, antimony, diamonds, silver, and gold. Other natural resources are rubber, pepper, and oil.

SINGAPORE, THE BRITISH LION'S "LEFT PAW"

CALLED "City of the Lion" since its founding in 1819 on a swampy island infested with jungle beasts, Singapore is now becoming a sub-capital of the British Lion's realm in the Orient. Conferences between diplomats from London and representatives from Hong Kong, Malaya, Australia, and New Zealand are outlining plans to make this the London of the Far East, capable of independent action. Singapore is known already as the strongest fortress in the Orient.

This tropical metropolis of the mangrove swamps occupies a 217-square-mile island (73 miles north of the Equator) at the tip of the Malay Peninsula, to which a causeway connects it. Of the 650,000 people, about 14,000 are Occidentals. The others are Malays or Chinese (illustration, cover), Afghans, Japanese, Iranians, Cambodians, Singhalese from Ceylon, Hindus from India, or Filipinos. Singapore tolerates the language, diet, costume, and religion of each group, as shown, for example, by the Siamese Tiger Temple (illustration, inside cover).

Only a fraction of London's age and size, Singapore is already one of the world's ten leading ports because a quarter of the earth's sea lanes converge on the Strait of Singapore. The harbor area is 36 square miles.

Among the exotic wares of Singapore's commerce, about a third of all the rubber and tin the world produces passes over the port's docks. Normally the United States buys 57 per cent of the rubber and 78 per cent of the tin.

Note: For other material on Singapore, see "Life Grows Grim in Singapore," in the *National Geographic Magazine*, November, 1941, and "Behind the News in Singapore," July, 1940.

Bulletin No. 5, November 3, 1941.

Photograph by Lawrence Copley Thaw

FRONTIER NATIVES RULED FROM BRAZZAVILLE LIVE IN INVERTED VASES

In the valley of the Logone River, which marks the northwestern frontier of French Equatorial Africa, it is not the carpenter who builds houses but the pottery maker. Clay is moulded into cool, one-room huts shaped like inverted jardinieres or vases, and the outer layer is incised or overlaid with decorative patterns. The clay in this region has a pinkish cast.